

WHAT IS CLAIMED IS:

1 1. A method of transmitting and receiving data packets at a communications
2 unit, comprising the steps of:

3 a) transmitting a data packet from said unit beginning at a first time
4 selected by the unit;

5 b) receiving at said unit an acknowledge packet during a second time
6 period occurring only at selected time delay after said first time, the acknowledge
7 packet including data coded using a number sequence;

8 c) decoding said acknowledge packet using said number sequence
9 beginning at said selected time adjusted according to a previous reception of an
10 acknowledge packet at said unit.

1 2. A method according to claim 1 wherein said steps of transmitting and
2 receiving are by spread spectrum RF signals.

1 3. A method according to claim 2 wherein said communications unit is one
2 of a plurality of remote stations associated with a base station transmitting said
3 acknowledge packet.

1 4. A method according to claim 3 wherein said remote stations are hand-
2 held data-gathering units which include manual control elements, and wherein at
3 least some of said remote stations include bar-code reading devices.

1 5. A method according to claim 1 including the step of, prior to transmitting
2 said data packet and receiving said acknowledge packet, transmitting a first data
3 packet from said unit and detecting the time of actual receipt of a return packet,
4 to thereby obtain a value for adjusting said beginning time of said decoding.

1 6. A system for transmitting data packets from a first station to a second
2 station, comprising:

3 a) a transmitter in the first station for transmitting a data packet from
4 the first station to the second station during a first time period selected by the first
5 station;

6 b) a receiver in the first station for receiving an acknowledge signal
7 from the second station beginning during a second time period occurring only in a
8 time window referenced to said first time period, the acknowledge signal including
9 data coded by using a number sequence;

10 c) decoding means included in said receiver for decoding said
11 acknowledge signal using said number sequence and beginning at said selected time
12 in said window adjusted according to a previous reception of an acknowledge signal
13 at said unit.

1 7. A system according to claim 6 wherein said means for transmitting and
2 receiving use spread spectrum RF signals.

1 8. A system according to claim 7 wherein said communications unit is one
2 of a plurality of remote stations associated with a base station transmitting said
3 acknowledge packet.

1 9. A system according to claim 4 wherein said remote stations are hand-held
2 data-gathering units which include manual control elements, and wherein at least
3 some of said remote stations include bar-code reading devices.

1 10. A system according to claim 6 wherein said transmitter, prior to
2 transmitting said data packet, transmits a first data packet from said unit, and said

3 receiver and decoder detect the time of actual receipt of a return packet, to thereby
4 obtain a value for adjusting said beginning time of said decoding.

1 11. A method of transmitting and receiving data packets at a communica-
2 tions unit, comprising the steps of:

3 a) transmitting a first data packet from said unit beginning at a first
4 time selected by the unit;

5 b) receiving at said unit a first acknowledge packet during a time
6 window beginning only at a selected time delay after said first time, the first
7 acknowledge packet including data coded using a number sequence;

8 c) decoding said first acknowledge packet using said number
9 sequence, and storing the value of any deviation of the actual time of actual receipt
10 of said first acknowledge packet from said selected time;

11 d) thereafter transmitting a second data packet from said unit
12 beginning at a second time selected by the unit;

13 e) receiving at said unit a second acknowledge packet during a time
14 window beginning only at said selected time delay adjusted according to said
15 deviation after said second time, the second acknowledge packet including data
16 coded using said number sequence; and

17 f) decoding said second acknowledge packet using said number
18 sequence beginning at said selected time delay adjusted according to said deviation.

1 12. A method according to claim 11 wherein said steps of transmitting and
2 receiving are by spread spectrum RF signals.

1 13. A method according to claim 12 wherein said communications unit is
2 one of a plurality of remote stations associated with a base station transmitting said
3 acknowledge packet.

1 14. A method according to claim 13 wherein said remote stations are hand-
2 held data-gathering units which include manual control elements, and wherein at
3 least some of said remote stations include bar-code reading devices.

1 15. A method of predicting the starting time of a coded sequence in a
2 message packet, comprising the steps of:

3 a) sending a first packet and receiving an acknowledge packet in
4 response thereto, said receiving of said acknowledge packet beginning at a
5 predicted time after said first packet;

6 b) decoding said acknowledge packet to find the beginning of said
7 coded sequence, and recording the time deviation of said beginning from said
8 predicted time;

9 c) sending a second packet and receiving an acknowledge packet in
10 response thereto, and decoding said acknowledge packet beginning at said predicted
11 time corrected by said time deviation.

1 16. A method according to claim 15 wherein said steps of sending and
2 receiving are by spread spectrum RF signals.

1 17. A method according to claim 16 wherein said step of sending is from
2 one of a plurality of remote stations associated with a base station transmitting said
3 acknowledge packet.

1 18. A method according to claim 17 wherein said remote stations are hand-
2 held data-gathering units which include manual control elements, and wherein at
3 least some of said remote stations include bar-code reading devices.

1 19. A method of transmitting and receiving data packets at a communica-
2 tions unit, comprising the steps of:

3 a) transmitting a request packet from said unit beginning at a first
4 time selected by the unit;

5 b) receiving at said unit an acknowledge packet containing a coded
6 test pattern during a time window beginning only at a selected time delay after said
7 first time;

8 c) decoding said acknowledge packet at a plurality of time offsets
9 from said selected time delay to determine the beginning of said coded test pattern,
10 and, if said beginning is detected, storing the value of any deviation of the actual
11 time of receipt of said acknowledge packet from said selected time;

12 d) thereafter transmitting a second data packet from said unit
13 beginning at a second time selected by the unit;

14 e) receiving at said unit a second acknowledge packet during a time
15 window beginning only at said selected time delay from said second selected time
16 and adjusted according to said deviation after said second time; and

17 f) decoding said second acknowledge packet beginning at said selected
18 time delay adjusted according to said deviation.

1 20. A method according to claim 19 wherein said steps of transmitting and
2 receiving are by spread spectrum RF signals.

1 21. A method of transmitting and receiving data packets by a communica-
2 tions link between a base station and a plurality of portable remote units, said base
3 station and each of said remote units maintaining a local reference frequency of the
4 same nominal frequency, comprising the steps of:

5 a) transmitting a data packet from one of said remote units beginning
6 at a first time selected by the remote unit;

7 b) receiving said data packet at said base station, including acquiring
8 the frequency and phase of said transmitted data packet at the beginning of said
9 data packet and maintaining the values of said frequency and phase during receipt
10 of said data packet;

11 c) transmitting an acknowledge packet from said base station to said
12 remote unit during a second time period occurring only at a selected time delay
13 after said first time, the acknowledge packet being sent at said frequency and phase
14 as maintained by said base station rather than at the local reference frequency of
15 said base station;

16 d) receiving said acknowledge packet at said remote unit using the
17 local reference frequency of the remote unit.

1 22. A method according to claim 21 wherein said steps of transmitting and
2 receiving are by spread spectrum RF signals.

1 23. A method according to claim 21 wherein said remote stations are hand-
2 held data-gathering units which include manually operated elements, and wherein
3 at least some of said remote stations include bar-code reading devices.

1 24. A method according to claim 21 wherein said step of receiving said
2 acknowledge packet at said remote unit includes tracking the frequency of the
3 acknowledge packet to allow for drift in frequency of transmission by said base
4 station.